

### REMARKS

Applicants respectfully request reconsideration of this application as amended. Claims 1-27 are pending in the application. Claims 1, 6, 7, 11, 12, 14, 23, and 25 have been amended. Claims 28-43 have been added. No claims have been canceled.

Applicants have amended the claims, particularly to overcome the Examiner's rejection of indefiniteness under 35 U.S.C. §112 and to more clearly distinguish the invention from the prior art cited. The Examiner initially rejected claims 1, 6, and 12 under 35 U.S.C. §112, second paragraph. Accordingly, Applicants have amended claims 1, 6, 7, 11, 12, 14, 23, and 25 to particularly point out and distinctly claim, in full, clear, concise and exact terms, the subject matter that Applicants regard as their invention.

The Examiner rejected Claims 1-12, 15, 21, 22, and 27 under 35 U.S.C. §103(a) as being unpatentable over Yun et al. in view of Alamouti et al. Yun discloses a conventional FDMA system. The Examiner recognizes that Yun fails to disclose the use of the OFDMA protocol. However, the Examiner believes it was well known in the art that OFDMA protocols are an improvement over FDMA protocols and cited Alamouti to teach the use of OFDMA protocols. The Examiner believes that it would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the use of OFDMA as taught by Alamouti into Yun. Applicants respectfully disagree.

FDMA is fundamentally different than the OFDMA protocol. In OFDMA, each subscriber can occupy an arbitrary number of subcarriers of the entire channel bandwidth, while in FDMA, each subscriber is assigned to only one voice channel. In other words, each assignment decision in Yun is made based on a one-dimensional spatial signature, while spatial signature in OFDMA is two-dimensional (e.g., a matrix or vector). Thus, the channel assignment decision of the present invention is claimed as based on two-dimensional (matrix)

spatial signature, which is much more difficult than a narrow band case (e.g., TDMA, CDMA, FDMA). Applicants respectfully submit that this feature is set forth in the claims since OFDMA channels are already specified in the claims. Even so, Applicants have amended claims 11 and 14 and added claims 36, 41, and 43 to explicitly set forth the two-dimensional nature of the spatial signatures.

Therefore, in view of this, Applicants respectfully submit that the present invention as claimed in Claims 1-12, 15, 21, 22, and 27 is not obvious in view of the combination of Yun and Alamouti.

Furthermore, with respect to Claim 6, Claim 6 sets forth assigning channels based on broadband channel characteristics. Yun does not disclose an assigning channel characteristics based on broadband channel characteristics. The Examiner cites column 2, lines 41-54 as teaching the assignment of channels based on broadband channel characteristics; however, this section appears not to disclose the use of broadband channel characteristics in any way. In view of this, Applicants respectfully submit that Claim 6 is not obvious in view of the combination of Yun and Alamouti.

Furthermore, with respect to Claim 7, Claim 7 sets forth assigning multiple OFDMA traffic channels. However, in Yun, each subscriber is assigned only one traffic channel  $k$  (TDMA time slot or an FDMA channel). Such is not the case in OFDMA where a particular set of subcarriers is assigned to a single subscriber based on its two-dimensional spatial signature. In view of this, Applicants respectfully submit that Claim 7 is not obvious in view of the combination of Yun and Alamouti.

Furthermore, with respect to Claim 15, Claim 15 sets forth assigning OFDMA traffic channels with the highest achievable rates. However, there is no mention of achievable rates in Yun's as Yun is related to narrow band voice networks (e.g., FDMA) and the present invention

as claimed is related to broadband data networks. Therefore, in view of this, Applicants respectfully submits that Claim 15 is not obvious in view of the combination of Yun and Alamouti.

The Examiner rejected claims 13-14 under 35 U.S.C. §103(a) as being unpatentable over Yun in view of Alamouti et al. and further in view of Wallace et al. Applicants reserve the right to swear behind Wallace. For the same reasons given above with respect to Claim 1, Applicants submit that one skilled in the art would not look to combine the teaching of FDMA in Yun with those set forth in Alamouti and Wallace. Furthermore, although Wallace does disclose the term "achievable" rates, there is no discussion of determining achievable rates using spatial characteristics of ongoing traffic and the 2D spatial signature of the new subscriber over each of the OFDMA channels with the presence of ongoing subscribers on OFDMA traffic channels. In view of this, Applicant respectfully submits that the present invention as claims in Claims 13 and 44 is not obvious in view of the combination of Yun, Alamouti, and Wallace.

The Examiner did indicate that Claims 23-26 were objected to as being dependent upon a rejected base claim but would be allowable if re-written in independent form, including all the limitations of the base claim and any intervening claims. Applicants have amended Claims 23 and 25 to include substantially all the limitations of their rejected base claim. Therefore, Applicants respectfully submit that Claims 23-26 are in condition for allowance.

Furthermore, Applicants have added Claims 28-35, and 37-42 that include limitations that are similar to some features of Claims 23-26. Applicants respectfully submit that these claims are in condition for allowance for the same reasons given above.

Accordingly, Applicants respectfully submit that the rejections under 35 U.S.C. §112 and §103(a) have been overcome by the amendments and the remarks and withdrawal of these

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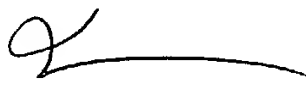
rejections is respectfully requested. Applicants submit that Claims 1-27 as amended and claims 28-43 as added are now in condition for allowance and such action is earnestly solicited.

Please charge any shortages and credit any overcharges to our Deposit Account No. 02-2666.

Respectfully submitted,

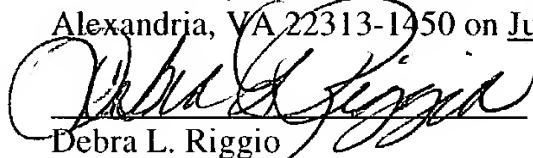
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